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J. Douglas
10/24/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant	: Greg Alan Kranawetter
Serial No.	: 09/319,326
Filed	: June 3, 1999
For	: COMPRESSION SYSTEM FOR AN MPEG COMPATIBLE DECODER
Examiner	: Anand Shashikant Rao
Art Unit	: 2613

BRIEF ON APPEAL

May It Please The Honorable Board:

Appellants appeal the final rejection of Claims 1-17 of the above-identified application in the Final Rejection dated May 20, 2002. The fee of $320.00 for filing this Brief is to be charged to Deposit Account 07-0832. Appellants waive an Oral hearing for this appeal.

Please charge any additional fee or credit any overpayment to the above-identified Deposit Account.

Three copies of the Brief are enclosed. This page is also submitted in duplicate for fee charging purposes.

I. REAL PARTY IN INTEREST

The real party in interest of Application Serial No. 09/319,326 is the assignee of record:

Thomson Consumer Electronics, Inc.
P O Box 5312
Princeton, New Jersey 08540
United States of America

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF THE CLAIMS

Claims 1-17, all the claims in the application after consideration of the response to the Final Rejection, are rejected.

Claims 1-17, all the rejected claims, are appealed.

IV. STATUS OF AMENDMENTS

All amendments were entered and are reflected in the claims included in Appendix I.

V. SUMMARY OF THE INVENTION

The invention is directed to a method and system for processing a digital data stream of MPEG coded image information. Independent Claim 1 recites an MPEG compatible signal processing network which includes an input network for receiving the datastream of MPEG compatible data and a decompressor for decompressing the compressed MPEG compatible data. In accordance with the principles of the invention, a plurality of similar, concurrently operative compressors respectively recompress different datastreams derived from the decompressed data. A memory stores the recompressed data.

Claim 17 is directed to a system for processing a digital datastream of MPEG coded image representative information having similar limitations to the system of Claim 1. The remaining independent Claims (Claims 10 and 14) are directed to a method for processing a datastream of compressed MPEG coded information representing image pixel data including similar limitations to the system of Claim 1. All other claims are dependent on either Claim 1, Claim 10 or Claim 14.

VI. ISSUES

Whether the subject matter of Claims 1-17 is unpatentable under 35 U.S.C. 103(a) over Kimura in view of Owen et al.

VII. GROUPING OF THE CLAIMS

Claims 2-9 are dependent on Independent Claim 1, Claims 11-13 are dependent on Independent Claim 10, Claims 15 and 16 are dependent on Independent Claim 14 and Claim 17 is independent. All claims stand together.

VIII. ARGUMENTS

The combination of Kimura et al. and Owen neither anticipates nor makes unpatentable the present claimed invention. Thus, reversal of the Final Rejection (hereinafter termed "rejection") of claims 1-17 under 35 U.S.C. § 103(a) over Kimura et al. in view of Owen et al. is respectfully requested.

Overview of the Cited References

Kimura et al. disclose an image encoding and decoding apparatus for dividing an image into sub-areas, and encoding or decoding each sub-area. A decoded signal is subject to an inverse DCT operation to produce a difference image. A predicted image is generated from a reference image stored in a shared memory circuit. The predicted image is added to the difference image to produce a restored image which is stored in the shared memory.

Owen et al. discloses reducing the memory required for decompression of a compressed frame. Owen et al. includes a decoder coupled to a memory where the frame is stored. The decoder is coupled to a DCT encoder having an output coupled to a memory. The encoder encodes only frames having interpicture prediction errors.

The Rejection of claims 1-17 under 35 U.S.C. § 103(a)

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1598 (Fed.Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion, or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed.Cir. 1988), *cert. denied*, 488 U.S. 825 (1988); *Ashland Oil Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 28, 293, 227 USPQ 657, 664 (Fed.Cir. 1985), *cert. denied,* 475 U.S. 1017 (1986); *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed.Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed.Cir. 1992).

The Examiner states that it would be obvious to combine the encoding of Owen et al. with the decoding circuit of Kimura et al. to produce the present claimed invention. Applicants disagree.

In the final rejection, the Examiner states that the decoders of Kimura perform motion compensation wherein decoded reference frames are stored in the "stored" memory so that the decoder is able to predict images. The Examiner further refers to a signal line with the sole purpose of storing decompressed reference data into the "shared" memory. Applicant agrees that Kimura stores decoded reference data into the shared memory. However, Kimura neither discloses nor suggests recompressing a datastream prior to storage in memory as claimed by applicants.

The Examiner further states that claims 1 and 10 of the subject application make no mention of a storing step for storing outputs from the decoders prior to recompression. However, the object of the present claimed invention is to store outputs from the decoders after recompression. The present claimed invention decompresses a received compressed MPEG compatible data and then recompresses decompressed data streams using a plurality of compressors prior to storage in

memory. Kimura et al. decompresses received data to produce a difference image for combination with the reference image stored in the shared memory to obtain a predicted image. The decompressed predicted image is then stored in the shared memory. Kimura et al. neither discloses nor suggests recompressing decompressed data streams in a plurality of compressors prior to storage into a memory as in the present claimed invention.

The Examiner then contends that a combination of Kimura et al. with Owen et al. is not only possible but is obvious due to the use of shared memory in Kimura et al. which would benefit from a judicious use of memory. Applicant respectfully disagrees. Kimura et al. is concerned with providing a circuit which has a small size, low cost, and high speed. This objective of Kimura is mentioned several times in Kimura (see, for example, Column 15, lines 29-38; Column 16, lines 56-62; Column 17, lines 49-55; Column 18, lines 22-44 and column 19, lines 2-3 of Kimura). Kimura is not specifically concerned with the amount of memory required. Moreover, combining Owen et al. with Kimura et al. defeats the objectives of Kimura et al. Specifically, in order to combine Owen et al. with Kimura et al. the circuit of Kimura et al. would require an additional re-encoder and decoder for each sub-area. These additional elements would greatly increase both the size and cost of the circuit of Kimura et al. This is in direct contrast to the small size, low cost and speed objective stated repeatedly throughout Kimura et al.

Combining the encoding and decoding functions of Owen et al. in the circuit of Kimura et al. would defeat the purpose of the circuit of Kimura et al., i.e. to decrease the size and cost of the circuit. It is thus submitted that it would not be proper to combine Owen et al. with Kimura et al. It is further submitted that based upon the objectives repeatedly stated throughout the patent to Kimura et al., one skilled in the art would not be motivated to combine Owen et al. with Kimura et al.

As noted above, the claims of the subject application recite a plurality of similar, concurrently operative compressors for respectively recompressing different datastreams derived from decompressed data to produce recompressed data. Owen et al. recite a single DCT encoder module 150 for compressing the output of the assembly unit 102. Owen et al. neither disclose nor suggest a plurality of similar, concurrently operative compressors as in the present claimed invention. Owen et al. also neither disclose nor suggest each of the plurality of compressors recompressing different datastreams derived from said decompressed data to produce recompressed data as in the present claimed invention. Thus, it is respectfully submitted that even if

Kimura et al. could be combined with Owen et al., the combination would not produce the system of the present claimed invention including a plurality of similar, concurrently operative compressors for respectively recompressing different datastreams derived from said decompressed data.

It is thus respectfully submitted that the combination of Owen et al. with Kimura et al. does not make the present invention as claimed in claim 1 unpatentable. Claims 10, 14 and 17 are all independent claims including limitations similar to those discussed above with respect to the rejection of claim 1. It is thus respectfully submitted that claims 10, 14 and 17 are also patentable over Kimura et al. when taken alone or in combination with Owen et al. for the same reasons discussed above with respect to claim 1. As all remaining claims are dependent on claims 1, 10, 14 or 17 it is respectfully submitted that these claims are also patentable over Kimura et al. when taken alone or in combination with Owen et al.

In view of the above remarks it is respectfully submitted that Kimura et al. when taken alone or in combination with Owen et al. do not make the present claimed invention unpatentable and thus, all claims (Claims 1-17) in the subject application are in condition for allowance.

IX. CONCLUSION

For these reasons, it is respectfully submitted that the claims of the application satisfy the requirements of 35 U.S.C. § 103, and removal of the rejections of claims 1-17 is respectfully requested.

Respectfully submitted,

Greg Alan Kranawetter

By

Ronald H. Kurdyla
Attorney for Applicants
Registration No. 26,932
(609) 734-6818

Patent Operation
Thomson multimedia Licensing, Inc.
P.O. Box 5312
Princeton, New Jersey 08543-5312
October 16, 2002

APPENDIX I

APPEALED CLAIMS

1. In a system for processing a digital datastream of MPEG coded image representative information, an MPEG compatible signal processing network comprising:

an input network for receiving a datastream of compressed MPEG compatible data;

a decompressor for decompressing said compressed MPEG compatible data to produce decompressed data;

a plurality of similar, concurrently operative compressors for respectively recompressing different datastreams derived from said decompressed data to produce recompressed data; and

a memory for storing recompressed data from said plurality of compressors.

2. A system according to claim 1, wherein

said MPEG compatible data is in the form of pixel blocks:

said plurality of compressors includes a first compressor for recompressing a first component of said data and a similar second compressor for recompressing a second component of said data; and

said memory stores said recompressed first and second components of data.

3. A system according to claim 1, wherein

said MPEG compatible data is in the form of pixel blocks;

said plurality of compressors includes a first compressor for recompressing a first datastream of interleaved pixel data and a second compressor for recompressing a second datastream of interleaved pixel data; and

said memory stores recompressed data from said first interleaved datastream and data from said second interleaved datastream.

4. A system according to claim 1, and further including a

an interleaving network responsive to said datastream for deriving therefrom multiple datastreams of interleaved pixel data in a predetermined sequence for processing by said multiple compressors, respectively.

5. A system according to claim 4, wherein

said interleaved pixel data comprise an MPEG compatible macroblock.

6. A system according to claim 4, wherein

said interleaving network produces a first data stream of interleaved first and second data components and a second datastream of interleaved third and fourth data components for respective processing by first and second compressors constituting said multiple compressors.

7. A system according to claim 6, wherein

said first, second, third and fourth data components comprise an MPEG compatible macroblock.

8. A system according to claim 1 and further including

a decompression network for decompressing recompressed data from said memory; wherein

9. A system to claim 4, wherein

said DPCM loop includes a motion compensation network.

10. A method of processing a datastream of compressed MPEG coded image representative data comprising the steps of:

decompressing said compressed data to produce decompressed data;

recompressing a first portion of said decompressed data using a first recompressor to produce first recompressed data using a second recompressor to produce second recompressed data; and

11. A method according to claim 10, further including the steps of decompressing said stored first and second recompressed data produce further decompressed data; and

DPCM processing said further decompressed data.

12. A method according to claim 10, wherein said DPCM processing includes

said first and second recompressing steps, and

a motion compensation processing step.

13. A method according to claim 10, wherein

said first portion of said decompressed data subjected to said first recompression step comprises a first group of interleaved data; and

said second portion of said decompressed data subjected to said second recompression step comprises a second group of interleaved data.

14. A method for processing a datastream of compressed MPEG coded information representing image pixel data including, an MPEG compatible decoding method for producing finally decoded pixel data for processing by a display processor, said decoding method comprising he steps of:

decompressing said compressed data to produce decompressed data;

deriving finally decoded motion compensated pixel data from said pixel data; and

storing data obtained from said deriving step in memory wherein

said deriving step includes the step of respectively recompressing different datastreams derived from said decompressed data using multiple concurrently operative similar compressors to produce recompressed data; and

said storing step includes the step of storing recompressed data from said multiple compressors.

15. A method according to claim 14, wherein

said deriving step includes a DPCM signal processing step; and

said method includes the further steps of

(a) separating said datastream into multiple datastream of interleaved data components; and

(a) providing said multiple interleaved datastreams to said multiple 30 compressors, respectively.

16. A method according to claim 15, wherein

said separating step produces a first datastream of interleaved first and second pixel data components and a second datastream of interleaved third and forth pixel data components comprising an MPEG compatible macroblock.

17. In a system processing a digital datastream of MPEG coded image representative information, an MPEG compatible signal processing network comprising:

an input network for receiving a datastream of compressed MPEG compatible data in the form of pixel blocks;

an interleaving network responsive to said datastream for deriving therefrom multiple datastreams of interleaved pixel data in a predetermined sequence for processing by respective compressors;

a decompressor for decompressing said compressed MPEG compatible data to produce a decompressed datastream;

a plurality of similar, concurrently operative compressors for recompressing said decompressed datastream to produce recompressed data, said plurality of compressors including a first compressor for recompressing a first datastream of interleaved pixel data derived from the decompressed MPEG datastream an d a second compressor for recompressing a second datastream of interleaved pixel data also derived form the decompressed MPEG datastream; and

a memory for storing recompressed data from said first and second interleaved datastreams.

APPENDIX II

TABLE OF CASES

1. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1598 (Fed.Cir. 1988).
2. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966).
3. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed.Cir. 1988), *cert. denied*, 488 U.S. 825 (1988).
4. *Ashland Oil Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 28, 293, 227 USPQ 657, 664 (Fed.Cir. 1985), *cert. denied,* 475 U.S. 1017 (1986).
5. *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed.Cir. 1984).
6. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed.Cir. 1992).

APPENDIX III

LIST OF REFERENCES

U.S. Patent No.	Issue Date	Inventors
5,701,160	December 23, 1997	Junichi Kimura et al.
6,028,635	February 22, 2000	Owen et al.

BRIEF ON APPEAL

TABLE OF CONTENTS